Nathanael Li

Curriculum Vitae

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Design Philosophy

I hope to see a world where sustainability is inherent to design interventions.

I believe that interdisciplinary teams motivated by people and planet inspire the most robust work to fight against climate change.

I prioritize reduction over production: The improvement of current buildings takes precedent over new construction and energy efficiency is the first step to a renewable energy transition.

Research Interests

Sustainability Mindsets
Community-Based Research
Corporate Social Responsibility
Operational & Embodied Carbon
Engineering & Energy Ethics
Data Centers & Society
Design Thinking
Green Certification Systems
Policy & Governance Structures
Adaptive Reuse and Retrofits
Biophilia & Biomimicry

Education

Virginia Tech — **Ph.D. Engineering Education**

344 Data & Decision Sciences
727 Prices Fork Rd
Blacksburg, Virginia 24061
(540) 231 - 6555

advised by Dr. Andrew Katz
Since August 2025
Preliminary Exam Spring 2027
GPA: 4.0

Relevant Coursework

Research Methods
Quantitative Data Analysis
Intro to Science & Technology Studies
Qualitative Data Analysis
Disciplinary Literacy in Eng. Ed.

Skills

Research Design
Research Reporting & Writing
RStudio
Regression and Quantitative Analysis
Survey Design
Literature Reviews
Interview Protocol Design
Interviewing
Qualitative Coding (*MAXQDA*)
Thematic Analysis

Virginia Tech | **M.S. Civil & Environmental Eng.**

200 Patton Hall
750 Drillfield Dr.
Blacksburg, Virginia 24061
(540) 231 – 6555

Focus: Sustainable Land Development
advised by Dr. Tripp Shealy
Expected to Complete in 2029
GPA: 4.0

Relevant Coursework

Sustainable Land Development
Land Use & Environment: Planning & Policy
Land Development Design Projects

Skills

LEED for Neighborhood Development
ENVISION
Civil3D
ArcGIS

Colorado School of Mines | **B.S. Design Engineering**

1500 Illinois Street
Golden, Colorado, 80401
(303) 273 - 3000

Focus: Sustainable Building Design
Graduated May 2024
GPA: 3.5

Relevant Coursework

Educational Psychology & Assessment
Principles of Building Science
Sustainable Engineering Design
Solar Energy Engineering
Design of Integrated Systems
Community-Based Research
Energy & Society
Corporate Social Responsibility
Intro to Green Building Science
Engineering for Sustainable Community Development
Design for a Globalized World

Skills

Ethnographic Research
HVAC Design & Energy Modeling
Life Cycle Assessments
Carbon Emission Calculations
Passive House Design
Solar PV and Solar Thermal Design
Systems Thinking
Visual Design & Marketing
Dynamic Presentation Design
Mentorship & Advising

Peer-Reviewed Research

Li, N. H. (2026, June). Marketing of Campus Carbon Management: Ensuring Stakeholder Representation in Institutional Sustainability Solutions. In *2026 ASEE Annual Conference & Exposition*.

Katz, A., Paretti, M. C., Shealy, T., Aruon, A., & **Li, N.** (2026, June). ECR-EDU Core Research: Student Mental Models of Social-Ecological-Technological Systems and their Capstone Design Projects. In *2026 ASEE Annual Conference & Exposition*.

Awards & Honors

NSF: GRFP Honorable Mention *2026 & 2025*
Received Honorable Mentions for my proposals to the National Science Foundation's Graduate Research Fellowship Program in both 2025 and 2026.

Distinction in Scholarly Achievement *May 2024*
Award from the Design Engineering program recognizing my unique classwork and breadth of scholarly work in and out of the classroom.

Best Sustainable Energy @ Mines Scholar *April 2024*
Selected for outstanding achievement among the Sustainable Energy @ Mines scholars. This was awarded based on my coursework, work on campus, and involvement in industry.

Efforts in Sustainable Energy Policy *April 2024*
Selected for my work in sustainable energy policy during my undergraduate degree. My papers on the energy impacts of LEED played a large role in this award.

1st Place – Best of Award for Social Impacts *April 2024*
Our team placed first out of 72 Capstone Design teams at Mines for our project's positive impacts on society. Projects were graded by an external judging team during the Capstone Design Showcase.

3rd Place – Best of Award for Environmental Impacts *April 2024*
Our team placed third out of 72 Capstone Design teams at Mines for our project's positive impacts on the environment. Projects were graded by an external judging team during the Capstone Design Showcase.

Distinction in Sustainable Energy @ Mines *April 2024*
Distinction program for undergraduates studying sustainable energy, leading efforts on campus, and applying their education to industry and scholarship.

Distinction for Leadership in Humanitarian Engineering *May 2024*
Distinction program for undergraduate students who have committed their studies, projects, and work towards the application of engineering towards humanitarian crises. My work in Capstone Design and classes in Engineering for Sustainable Community Development and Corporate Social Responsibility played large roles in this distinction.

Payne Institute for Public Policy Scholar *January 2024 – May 2024*
Selected to write an independent research paper for the Payne Institute Commentary Series.

Experience

Graduate Research Assistant – VT Engineering Education *December 2025 – Present*
Working with PI Dr. Andrew Katz and Co-PIs Dr. Marie Paretti and Dr. Tripp Shealy on an NSF: Engineering Education Centers project *Design for Sustainability: Modeling social-ecological systems in engineering design decisions*

Graduate Teaching Assistant – VT Engineering Education *Aug 2025 – Dec 2025*
Assisted Professor Cat Twyman with five sections of ENGE 1215: Foundations of Engineering I – a course devoted to teaching first-year engineering students about engineering, MATLAB, professionality, and working in a collaborative multidisciplinary environment.

Sustainability Consultant – Group14 Engineering, PBC. *June 2024 – August 2025*
A continuation of my role as Sustainability Intern as a full-time position. My responsibilities included LEED and Fitwel documentation, corporate social responsibility consulting, greenhouse gas inventories, and training new hires.

Research Proposal Assistant – Colorado School of Mines *June 2024 – September 2024*
Working under Dr. Dean Nieusma and Dr. Marie Stettler Kleine on coordinating proposals for an NSF grant in engineering education and a seed grant in agricultural engineering. Responsibilities include project management, reviewing projects awarded in the past, and seeking alignment with the former work of both professors.

Sustainability Intern – Group14 Engineering, PBC. *May 2022 – June 2024*
Consulting for LEED v4(.1), the WELL Standard, Living Building Challenge, and the Collaborative for High Performance Schools.

Campus Decarbonization Crew *August 2023 – May 2024*

Project Background

- Capstone Design project at Mines through the Sustainable Engineering Design Studio.
- Asked to identify ways to decarbonize our electricity usage on campus.
- I served as Communications Lead, Climate Scientist, and Social Scientist.
- Out of the other 71 Capstone Design teams, we placed third overall for environmental impact, and first overall for social impacts.
- Our project was proposed to the Colorado School of Mines so that they could build, own, and operate an Enhanced Geothermal System plant.

Skills, Programs, & Datasets

Operational Carbon Calculations
Ethnographic Research
Energy Ethics Analysis
Renewable Energy Modeling
Systems Engineering
Data Analysis
Cambium22 *(NREL)*
WattTime
ReOpt *(NREL)*
System Advisor Model *(NREL)*

Scenario Planner *(NREL)* Microsoft Excel

Mines Solar Decathlon & Tiny House *September 2020 – May 2024*
- Architecture Team member *2020 – 2021*
  - Responsibilities included floor planning, drafting, graphic design, interior design, and communications.
- Director of Design *2021 – 2023*
  - Oversaw an interdisciplinary team of engineers and architects.
- Secretary *(2021-22)*, President *(2022 – 2023),* and Tiny House Vice President *(2023-24)*
  - Manage operations of both the Solar Decathlon and the Tiny House projects.
  - Facilitate collaboration with other sustainability organizations on campus.

Skills & Programs

Architectural Design *(Revit & SketchUp)* Inter-Team Communications
Modeling *(AutoCAD & Physical Media)* Project Management
Passive House Design *(BeOpt)* Deliverable/Presentation Design

JEDI *January 2021 – May 2021*
In-class technical support for instructors at the Colorado School of Mines teaching in hybrid teaching environments.

Volunteeering and Service

VT Graduate & Professional Student Senate: Senator *August 2026-Present*
Elected by Engineering Education graduate students to represent the engineering education department at Virginia Tech in the Graduate and Professional Student Senate governance process.

VT Climate Action, Sustainability, and Energy Subcommittee Member *October 2025 – Present*
Participating in the Energy and Green Request for Proposals subcommittees helping Virginia Tech assess and achieve their climate action goals.

Blue Ridge Highlands Regional Science Fair: Judge *February 2026*
Volunteered as a judge for the science fair's *Energy: Sustainable Materials and Design; Environmental Engineering – Senior Division* and the *Genius Olympiad – Senior Division* award, providing feedback and recognition to high school students who were doing research in fields of life sciences, energy, and public health.

Sustainable Energy @ Mines Advisory Board *April 2022 – May 2024*
I served as a student representative to the managing faculty of the Sustainable Energy @ Mines program.

Design Engineering Student Advisory Board *October 2021 – May 2024*
Part of a group of design engineering students that advise DE faculty with student opinions and perspectives towards the growing program.

Mentoring

VT Interdisciplinary Projects (IDPro): Team ARGUS *Spring 2026 - Present*
Helped a team of Virginia Tech undergraduate engineering students with project management skills, presentation skills, and developing a feasibility study for an 'Autonomous Reconnaissance & General Underwater System' robotic submarine.

Undergraduate Research

N. Li, "LEEDing Power Back to Communities through Green Building Codes - Advice for Policymakers Considering LEED Certification," *Payne Institute for Public Policy Student Commentary*, doi: 10.25676/11124/179090.

LEEDing the Energy Transition: *An Analysis of the Perceived vs. Actual Impact of LEED-certified Buildings* *December 2023*
Final course paper for *Energy & Society.*

Forming Operational Carbon Reductions: *Understanding Carbon Emissions Beyond the Project Boundary* *December 2023*
Final course paper for *Principles of Building Science.*

Envisioning an Education in Earth, Energy, & Environment *May 2023*
Final course paper for *Community-Based Research*.

Presentations

(Poster) **Using Undergraduates:** *Student Involvement in Campus Decarbonization Solutions* *American Solar Energy Society SOLAR 2024 Conference*

Justice, Equity, Diversity, & Inclusion in Buildings *2023*
I presented on how JEDI principles are applicable to the building design process and presented case studies on application of each framework in the real world.

Mines Green Team SusTalks *2021 & 2022*
I have participated in multiple opportunities to discuss the importance of the green building industry in the fight against climate change, and how the Mines Solar Decathlon & Tiny House club is providing opportunities for undergraduates to get their start in the industry.